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REPUBLIEK VAN SUID-AFRIKA

PATENT KANTOOR  
DEPARTEMENT VAN HANDEL  
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REPUBLIC OF SOUTH AFRICA

PATENT OFFICE  
DEPARTMENT OF TRADE AND  
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The documents attached hereto, are true copies of the Application  
Form, Provisional Specification and Drawings of Patent Application  
No. 2004/4498 filed on the 8 June 2004 in the name of NOEL CEDRIC  
FENSHAM and entitled: " CIGARETTE PACK TENS-ELONGATED  
ARTICLE".


## PRIORITY DOCUMENT

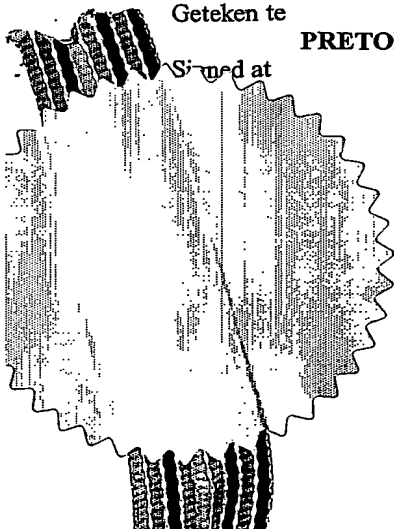
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Geteken te  
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21 dag van  
day of  
September 2004

  
Registrar of Patents



|  |  |         |                           |                    |  |                 |  |
|--|--|---------|---------------------------|--------------------|--|-----------------|--|
| REPUBLIC OF SOUTH AFRICA                                       |  |         |                           | PATENTS ACT, 1978  |  |                 |  |
| REGISTER OF PATENTS  |  |         |                           |                    |  |                 |  |
| Official application No.                                       |  |         | Lodging date: Provisional |                    |  | Acceptance date |  |
| 31.01.2004/4498  |  |         | 2004-08-08                |                    |  | 47              |  |
| International classification                                   |  |         | Lodging date: Complete    |                    |  | Granted date    |  |
| 51   |  |         | 23                        |                    |  |                 |  |
| Full name(s) of applicant(s)/Patentee(s):                      |  |         |                           |                    |  |                 |  |
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| Applicants substituted:  |  |         |                           |                    |  | Date registered |  |
| 71   |  |         |                           |                    |  |                 |  |
|  |  |         |                           |                    |  |                 |  |
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|  |  |         |                           |                    |  |                 |  |
| Priority claimed   |  | Country |                           | Number             |  | Date            |  |
| 33   |  |         |                           | 31                 |  | 32              |  |
| 33   |  |         |                           | 31                 |  | 32              |  |
| 33   |  |         |                           | 31                 |  | 32              |  |
| Title of Invention   |  |         |                           |                    |  |                 |  |
| 54 CIGARETTE PACK TENS - ELONGATED ARTICLE                     |  |         |                           |                    |  |                 |  |
| Address of applicant(s)/Patentee(s) 7 MONTAGU SIMPSON CRESCENT |  |         |                           |                    |  |                 |  |
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| 74 BENMORE 2010.   |  |         |                           |                    |  |                 |  |
| Patent of addition No.   |  |         |                           | Date of any change |  |                 |  |
| 61   |  |         |                           |                    |  |                 |  |
| Fresh application based on                                     |  |         |                           | Date of any change |  |                 |  |

## APPLICATION FOR A PATENT AND ACKNOWLEDGEMENT OF RECEIPT

(Section 30 (1) - Regulations 22)

(See notes overleaf)

Revenue stamps or revenue  
franking machine impression  
Official date stamp

The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application filed in duplicate

|                          |               |                                  |
|--------------------------|---------------|----------------------------------|
| Official Application No. |               | (i) NCF 134                      |
| 21 01                    | • 2004 / 4498 | Applicant's or agent's reference |

|       |                                   |                            |
|-------|-----------------------------------|----------------------------|
| (ii)  |                                   | NOEL CEDRIC FENSHAM        |
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|       | Address(es) of applicant(s).....  | BENMORE GARDENS, SANDTON   |

|    |                    |   |
|----|--------------------|---|
| 54 | Title of invention | CIGARETTE PACK TENS - ELONGATED ARTICLE |
|----|--------------------|---|

|     |   |
|-----|---|
| (v) | The applicant claims priority as set out on the accompanying form P 2 |
|-----|---|

|       |   |
|-------|---|
| (vi)  | The application is for a patent of addition to Patent Application No. |
| 21 01 |   |

|       |  |
|-------|--|
| (vii) | The application is a fresh application in terms of section 37 and based on Application No. |
| 21 01 |  |

|                                     |   |
|-------------------------------------|---|
| (viii)                              | This application is accompanied by:   |
| <input checked="" type="checkbox"/> | 1. A single copy of a provisional or two copies of a complete specification of ..... 7 ..... pages. |
| <input checked="" type="checkbox"/> | 2. Drawings of ..... 1 ..... sheets.  |
| <input type="checkbox"/>            | 3. Publication particulars and abstract (form P 8 duplicate).                                       |
| <input type="checkbox"/>            | 4. A copy of Figure ..... of drawings (if any) for the abstract.                                    |
| <input type="checkbox"/>            | 5. An assignment of invention.  |
| <input type="checkbox"/>            | 6. Certified priority document(s) (state number).   |
| <input type="checkbox"/>            | 7. Translation of the priority document(s).   |
| <input type="checkbox"/>            | 8. An assignment of priority rights.  |
| <input type="checkbox"/>            | 9. A copy of the form P 2 and the specification of S. A. Patent Application No.                     |
| <input checked="" type="checkbox"/> | 10. A declaration and power of Attorney on form P 3.  |
| <input type="checkbox"/>            | 11. Request for ante-dating on form P 4.  |
| <input type="checkbox"/>            | 12. Request for classification on form P 9  |
| <input type="checkbox"/>            | 13.   |

|      |   |
|------|---|
| (ix) | 74 Address for service: P.O. Box 1249, BENMORE 2006 |
|------|---|

Dated this 8 day of JUNE 2004

signature of applicant(s) of agent

The duplicate will be returned to the applicant's address for for service as proof of lodging but is not valid unless endorsed with official stamp.

|  |
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| REGISTRAR OF PATENTS DESIGNS,<br>TRADE MARKS AND COPYRIGHT |
| Received   |
| 2004-06-08<br>Official date stamp                          |
| Registrar of Patents                                       |

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
DECLARATION AND POWER OF ATTORNEY  
(Section 30 - Regulation 8, 22(i)(c) and 33)

FORM P.3

PATENT APPLICATION NO

REF:

LODGING DATE

01

2004/4498

22

2004-06-08

JLL NAME(S) OF APPLICANT(S)

NOEL CEDRIC FENSHAM

JLL NAME(S) OF INVENTOR(S)

NOEL CEDRIC FENSHAM

EARLIEST PRIORITY CLAIMED

COUNTRY

NUMBER

DATE

33

31

32

TE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

TITLE OF INVENTION

CIGARETTE PACK TENS - ELONGATED ARTICLE

I/we NOEL CEDRIC FENSHAM

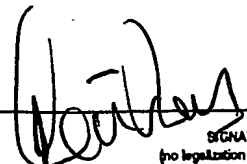
hereby declare that :-

- ① I/we am/~~are~~ the applicant(s) mentioned above;
- 2 I/we have been authorized by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of \_\_\_\_\_ of the applicant(s);
- ③ the inventor(s) of the abovementioned invention is/~~are~~ the person(s) named above and the applicant(s) has/~~have~~ acquired the right to apply by virtue of an assignment from the inventor(s);
- ④ to the best of my/~~our~~ knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;
- 5 this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and
- 6 the partners and qualified staff of the firm of \_\_\_\_\_ patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED AT

PRETORIA THIS 8 DAY OF JUNE

20 04



SIGNATURE(S)  
(no legalization necessary)

In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories, delete paragraph 1, and enter capacity of each signatory in paragraph 2.  
If the applicant is a natural person, delete paragraph 2.  
If the right to apply is not by virtue of an assignment from the inventor(s), delete 'an assignment from the inventor(s)' and give details of acquisition of right.  
For non-convention applications, delete paragraph 5.

REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

## PROVISIONAL SPECIFICATION

(Section 30(l) - Regulation 27)

|                          |                 |               |              |              |
|--------------------------|-----------------|---------------|--------------|--------------|
| Official Application No. |                 |               | Lodging Date |              |
| 21                       | 01 <sub>0</sub> | • 2004 / 4498 | 22           | 2004 -06- 08 |

|                              |                     |
|------------------------------|---------------------|
| Full name(s) of applicant(s) |                     |
| 71                           | NOEL CEDRIC FENSHAM |

|                              |                     |
|------------------------------|---------------------|
| Full name(s) of inventors(s) |                     |
| 72                           | NOEL CEDRIC FENSHAM |

|                    |   |
|--------------------|---|
| Title of invention |   |
| 54                 | CIGARETTE PACK TENS - ELONGATED ARTICLE |

2004/4498

## Packaging of elongate articles

### Field of the invention

This invention relates to the packaging of elongate rod-like articles such as smoking articles, in sealed blister-pack type packages. The invention is more particularly  
5 concerned with sealing arrays of smoking articles within a series of blister-pack compartments.

### Background of the invention

Blister tray type packaging is used for the packaging of many different types of articles, including medical products, foodstuffs and the like. However, such packaging is  
10 not used in some industries because of difficulty in packaging particular articles, or because the articles are not considered suitable for this type of packaging.

Cigarettes are generally sold in packs of twenty or thirty cigarettes, typically within a crush-proof hinge-lid pack, or a crushable soft pack.

A light smoker or a smoker who is trying to give up smoking might not wish to  
15 purchase a full pack of cigarettes. However, cigarettes are not usually sold in smaller numbers, other than in informal sale arrangements. Opening of packets and supplying cigarettes in small numbers is both unhygienic and can lead to the supply of inferior product.

Also, traditional cigarette products tend to be expensive to manufacture. This is  
20 because the machinery to assemble the packages and insert the cigarettes into each package is extremely complex and costly. Such machines are also costly to maintain and require skilled operating staff to supervise manufacture. Since these costs are borne ultimately by consumers of the cigarettes, the complexity of the packaging process adds significantly to the cost of cigarettes to the consumer.

25 . It is also important that wasted space is minimised for bulk packaging of smoking articles since any wasted space will decrease the bulk density of the packaged articles leading to an increase in transport and storage costs.

2004/4498

### Summary of the invention

According to a first aspect of the invention there is provided a package comprising a tray formed with a plurality of sub-trays, each sub-tray having a trough formation shaped to accommodate at least one elongate rod-like article, with adjacent trough  
5 formations being surrounded and spaced apart from one another by planar lands to which a peelable or rupturable backing film is laminated so as to define a plurality of individually sealed compartments, with a fold line being defined in the land between each trough formation for allowing the sub-trays to be inwardly folded into a mutually nested position to define a cylindrical package, with the outer walls of the package being constituted by  
10 the backing film.

The package may be three-, four- or six-sided.

Preferably, the package is four-sided so as to define a rectangular cylindrical package.

Conveniently, the outermost sub-trays are provided with a retaining arrangement  
15 for allowing them to be joined together, the retaining arrangement typically being in the form of an adhesive marginal flap.

The tray is preferably formed from a thermo-plastic material, and

Preferably, the trough formations are shaped to accommodate at least two rod-like articles. More preferably, in the case of a four-sided package, first and third trough  
20 formations are shaped to accommodate two articles in a side-by-side configuration, and second and fourth trough formations are shaped to accommodate three articles in a triangular stacked configuration.

Mutual nesting is typically provided by convex radiused portions of the first and third trough formations nesting within concave radiused portions of the second and fourth  
25 through formations nesting recesses defined between the double and single layer of rod-like articles.

As a further alternative, in the case of a four sided package, first and third trough formations may be shaped to accommodate five articles in a 3:2 stacked configuration,

and second and fourth trough formations may be shaped to accommodate six articles in a 3:2:1 stacked configuration.

Alternatively, a six-sided package may be provided with each of the six trough formations being shaped to accommodate three articles in a stacked configuration.

5        The fold lines may constitute lines of weakness by being scored or perforated for allowing the selective removal of individual sealed compartments..

Typically, the backing film is provided with film access means.

The film access means may comprise a non-attached corner tag for allowing the film to be manually gripped prior to peeling.

10       Alternatively, the film access means may comprise a blister tray having a peeling recess spaced away from the planar level and defining an airgap for allowing the film to be manually gripped prior to peeling.

15       The backing film may be laminated to the tray by means of a resealable adhesive adapted to allow access to be obtained to the articles within the trough formation by peeling the backing film away from the tray, and resealing the backing film to the tray.

Preferably, each of the elongate trough formations terminate in minor planar end walls which are spaced apart from one another by a distance corresponding to the lengths of the smoking articles, so that the inner surfaces of the end walls serve to retain tobacco particles within the smoking articles.

20       Preferably the radius of curvature of each elongate concave recess is half the diameter of the rod-like articles to be located in the trough formation.

Each trough formation may be of generally triangular, truncated triangular, trapezoidal or rectangular configuration so as to accommodate said array of smoking articles in a space efficient configuration.

25       The smoking articles are typically in a nested configuration within each trough formation and, in the case of a multi-layer array, the articles preferably progressively decrease by one from a base layer upwards.



The backing film may be laminated to the lands by any bonding method, such as gluing or heat sealing, as well as by a co-extrusion process.

### Brief description of the drawings

Figure 1 shows a top perspective view of a first embodiment of a blister package of the invention in a partly opened out position;

Figure 2 shows a sectional top plan view of the package of Figure 1 when filled with smoking articles;

Figure 3 shows a sectional top plan view of the package of Figure 2 in the closed position, and

Figure 4 shows a partly schematic top perspective view of the package of Figure 3.

### Detailed description of the embodiments

Referring first to Figure 1 a blister package comprises a transparent blister tray 10 which is vacuum formed from a sheet of clear PVC having a thickness of between about 180 and 250 microns. The blister tray 10 is folded into an adjoining array of four sub-trays 12, 14, 16 and 18 formed with corresponding trough formations 12.1, 14.1, 16.1 and 18.1. The trough formations 12.1 and 16.1 are dimensioned to accommodate an array of three conventional cigarettes 20 in a triangular formation, and the trough formations 14.1 and 18.1 are arranged to accommodate an array of two conventional cigarettes 21 alongside one another. Each cigarette typically has a length of 85 mm and a diameter of 8 mm, with opposed ends of the cigarette abutting opposed planar end faces 22 and 24 so as to prevent particles of tobacco from being dislodged from the tip of each cigarette.

Extending between and surrounding each trough formation 12.1 to 18.1 are planar land zones 12.2 to 18.2. Adjacent land zones are joined along parallel scored fold lines 26, 28 and 30. An adhesive flap 32 extends along the free edge of the land zone 12.2. As is clear from Figure 2, a peelable backing film 34 extends across and is peelably bonded to the outer surface of the land zones to define a series of sealed pockets providing air-and water-tight housings for the cigarettes. The backing film or web is typically formed from a coated polyethylene having thickness of approximately 60

microns. The film is a multi-layer very high moisture barrier film which is peelable across the full seal range.

5 In Figure 3, it can be seen how the sub-trays are folded inwardly along the fold lines 26, 28 and 30 to form a rectangular cylindrical package 36 with the trough formations nesting snugly together in a compact self-supporting arrangement. In particular, it can be seen how the concavely radiused portion of the troughs 12.1 and 16.1 nest within the complementally convexly radiused portions of the troughs 14.1 and 18.1. The package is held together by virtue of the adhesive flap adhering to the opposite outer or inner face alongside the edge of the land zone 18.2. the 22. The planar land zones 22 extend  
10 between adjacent troughs, as well as beyond the opposed end faces 18 and 20 of the trough.

The backing film is manufactured by LMG Smith Brothers under film designation Y 577/2, and has the following data sheet:

**Film Designation Y 577/2 or similar**

15 **Description**

A blown, co-extrudable, or laminated polyethylene multi-layer very high moisture barrier film which is peelable across the full seal range, and which provides a peelable seal to a PVC or APET formable base.

20 **Sealing Details:**

Seal type: constant heat

Sealing range: 80° - 110°C

**Physical appearance:**

Appearance: clear

25 Colour: full white

Opacity 60 = 5%

**Gauge Range:**

Film is available in the range of 37- 100 microns.

**Technical Data:**

|                             | <b>Tolerance:</b> | <b>Method:</b>                          | <b>Nominal</b>              |
|-----------------------------|-------------------|---|-----------------------------|
| Gauge                       | $\pm 12\%$        | Micrometer                              | 60 Microns                  |
| Yield                       | $\pm 5\%$         | Analytical                              | 17.6M <sup>2</sup> /Kg      |
| O <sub>2</sub> Permeability |                   | Oxtrans                                 | >1500ccM <sup>2</sup> /Day  |
| WVTR                        |                   | EPS Dynamic<br>WVTR(38°C and<br>90% RH) | <3,5gms/M <sup>2</sup> /Day |

5 A series of parallel perforations may be used to define the fold lines 26, 28 and 30. This has the advantage of allowing individual sub-trays to be selectively torn away from the remaining sub-trays. The perforations are formed through both the planar land zones of the blister tray and the peelable film. It will be appreciated in particular from Figure 3 how the planar lands adjacent the three- cluster troughs are broader than the two- cluster troughs. This allows for the snugly nested configuration of Figure 3.

10 In order to enable the film to be peeled off more easily from the surface of the planar land, a corner-piece 38 of the film is not attached, so as to provide a lifting tab for peeling off the film. Each strip may be provided with a similar non-attached lifting tab 38. As a further alternative, each of the planar land zones surrounding each trough may be formed with a frangible corner piece 40 which can be broken away to enable the overlying corner piece of the film 36 to be gripped.

15 In place of a peelable film, a rupturable film may also be used as a backing film. This may be in the form of a 12 to 30 micron hard aluminium foil film of the type manufactured by Alusuisse. The film is lacquer coated on its operative inner side to enable it to be laminated to the lands of the blister tray. The opposite exposed face of the metallic film or foil is able to receive printing for advertising purposes. A rupturable film  
20 of this type is sufficiently strong and flexible to ensure that the cigarettes are maintained

within the blister pack, while at the same time being able to rupture relatively easily by pressure of the cigarette caused by finger pressure on the opposite side of the deformable trough, without deforming the cigarette unduly.

The blister pack of the invention is ideally suited to an economical and high speed  
5 and typically continuous manufacturing process.

The trough recesses will have radius of curvature which is half the diameter of the smoking articles to be located therein. For conventional cigarettes, having a diameter of 8mm, the radius of curvature of the recesses will thus be approximately 4mm. The internal  
10 contour configuration of the trough formation will ensure that when the smoking articles are located in the trough formations during packaging the smoking articles will align naturally in the most space efficient configuration within the trough formation. The fluted configuration of the troughs will also serve to rigidify the troughs ensuring that the smoking articles are protected against damage during transportation.

It will be understood that the invention disclosed and defined herein extends to all  
15 alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

The foregoing describes embodiments of the present invention and modifications,  
20 obvious to those skilled in the art can be made thereto, without departing from the scope of the present invention.



Figure 1

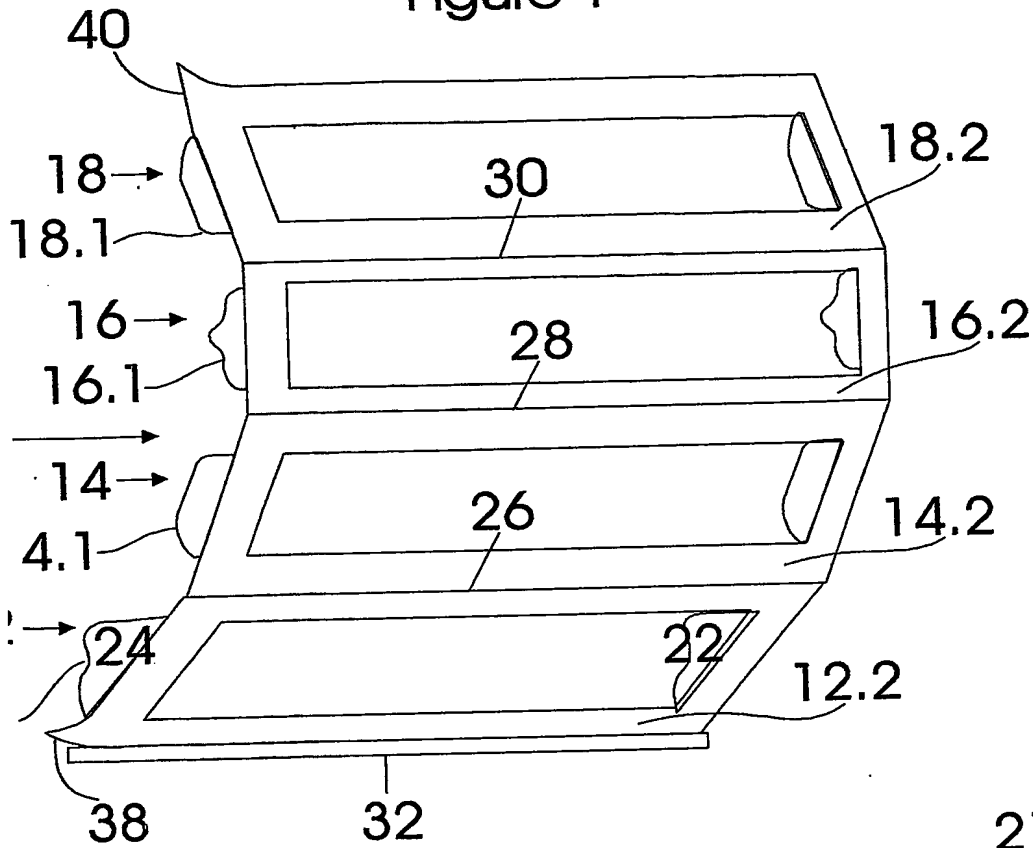


Figure 3

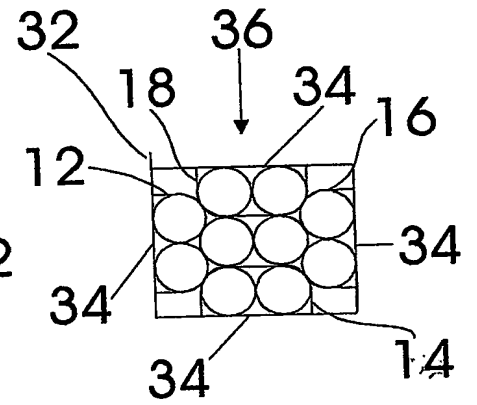


Figure 4

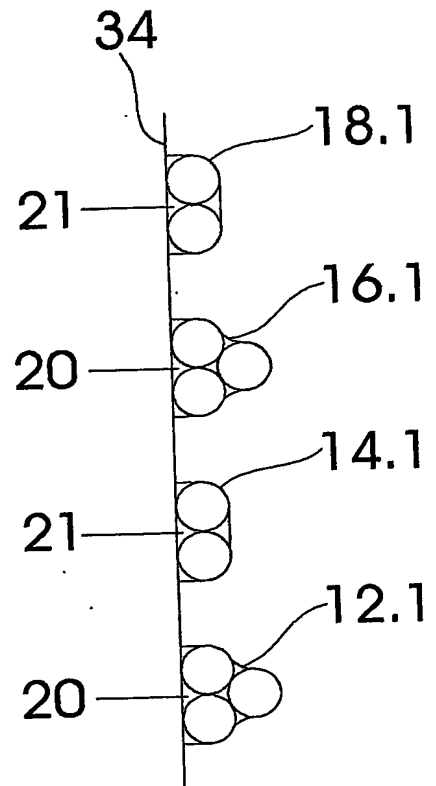
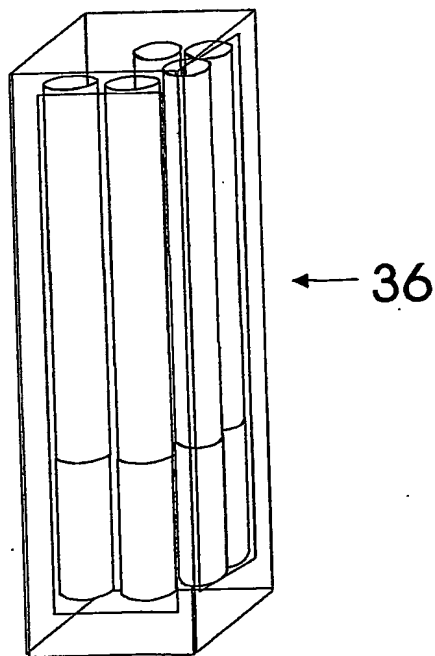


Figure 2